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1.0 Introduction

This manual describes how to install, test, and service the Centeron[®] Digital Pressure Level Monitor Series (hereafter referred to as the PD). The PD is part of the Centeron[®] Level Monitoring System, which includes the Centeron[®] Web View (hereafter referred to as Web View) internet data and device configuration access.

This guide does not include the detailed operation of the WebView internet access. Refer to the internet help screens or Robertshaw Technical Support (See Section 5.3) for this information.

The description herein is based on a standard installation. The PD is to be installed as fixed, permanently connected equipment. This means that the PD should be fastened to a tank on either a 1.5" NPT or 2" NPT pipe thread.

Due to the power required to operate the cellular modem, **do NOT install the PD on tanks that are located in Classified Hazardous Locations or contain flammable vapors.**

2.0 Product Overview

2.1 Description

The PD is a battery-powered unit that measures and transmits the level, device temperature, and other status information to Web View for display to the customer. The PD can be configured in the field using Web View. The PD uses a cellular modem to transmit and receive data.

2.2 Operation

The PD uses a scheduler to determine when to make a level measurement. The PD also measures the device's temperature at the same time that it measures the fluid level. Based on the device's schedule and any alarm conditions, the PD transmits the data to Web View. Web View further processes the data and displays it on the internet. Web View also has the ability to send alerts to the end user via e-mails or faxes.



WARNING: Do not install the PD on tanks that are located in Classified Hazardous Locations or contain flammable vapors.

2.2.1 Measurement Operation

All measurements are taken immediately prior to the PD reporting to Web View. Using the scheduler on Web View, the user can schedule additional measurements for use with level setpoints and other alarms.

2.2.1.1 Pressure Level Measurement

The PD measures fluid level with a resolution of 0.1” H₂O.

2.2.1.2 Temperature Measurement

The temperature of the tank contents is measured at the same time as the level with a resolution of 0.2 °C. The temperature inside the PD’s enclosure is also measured to the same resolution.

2.2.1.3 System Quality and Status Measurements

The PD measures the status of its internal battery. The battery level is reported as a numeric value to indicate the amount of life left in the battery. Web View interprets the reported value to provide the user with an indication of when the battery should be changed.

The PD measures the cellular signal strength. This value is displayed by Web View to indicate the quality of the communication link.

2.2.2 Scheduler Operation

The PD has a sophisticated scheduler that allows the user to configure:

- daily or weekly reporting,
- number and time of reports per day or week, and
- how frequently to perform extra measurements between transmissions.

The user can configure the schedule using Web View. Please refer to the online help or contact technical support (See Section 5.3) if you have any questions regarding the configuration of the PD.

2.2.3 Data Transmissions

The PD will transmit data on a preset schedule, on an alarm condition, or when the disable magnet is removed from its slot in the enclosure.

2.2.3.1 Regularly Scheduled Transmissions

All transmission scheduling is configurable from Web View. Internal timekeeping allows the user to configure the times for transmissions within 15 minutes of accuracy. The schedule can be set from once per hour (maximum of nine transmits per day) to once per week. Measurements will be performed immediately before regularly scheduled transmissions.

IMPORTANT NOTE: The PD battery life has been specified for a schedule of (3) transmissions per day with hourly measurements. Changing the PD schedule will affect unit battery life.

2.2.3.2 Alarm Transmissions

The PD will transmit immediately upon detecting an alarm condition. Web View can be configured to send e-mail alerts whenever it receives an alarm from the PD. Please refer to Section 2.2.4 for more detail.

2.2.3.3 Forced Transmissions

Whenever the disable magnet is removed from the housing, the PD will take its measurements and transmit immediately. If the magnet is left in the housing for more than one minute before it's removed, the PD will take its measurements, transmit immediately, and request that Web View update its configuration.

2.2.4 Alarm Operation

The PD provides flexible alarm capabilities. The PD has alarms for level setpoints. The alarms can be configured using Web View. Upon an alarm condition, the PD will immediately transmit to Web View. Web View can be configured to send an e-mail alert whenever an alarm is reported by the PD.

To take advantage of the alarms, the PD should be configured to take more frequent measurements than just immediately prior to regular transmissions. For example, having the unit measure once per hour allows the detection of alarms within an hour of when it happens. Having the unit measure every five minutes would detect an alarm condition within five minutes of when it happened. Increasing the frequency of measurements does affect battery life. If you have questions regarding how frequently to measure, please contact Robertshaw Technical Support (See Section 5.3).

2.2.4.1 Level Setpoint Alarm

The PD provides two level setpoints. The user can configure the setpoints to alarm as the level is increasing, decreasing, or passing the setpoint in either direction. The user can configure a deadband around each setpoint to avoid unnecessary calls.

2.2.5 Cellular Network Operation

The PD transmits its data using the normal standard cellular network using many cellular providers. As with all cellular devices, coverage includes most of the United States, Canada, and Mexico. If you have any issues regarding the PD communicating with Web View, please contact Robertshaw Technical Support (See Section 5.3). They will have the latest information regarding any network issues in the area where the device is located.

2.3 Environmental Specifications

The following environmental specifications should be observed when installing the PD:

- Temperature Range: -30°C to +70°C

- Designed for indoor or outdoor use.
- Type 4 enclosure.
- Exposed parts are nylon, polypropylene, Buna-N, FEP Teflon, brass, and 316 stainless steel.
- Threads for 1.5” NPT and 2” NPT bung mounting.

2.4 Certifications

This equipment complies with Part 15 of the FCC Rules. On the enclosure of this equipment is a label that contains, among other information, the FCC registration number.

2.4.1 FCC Notice—Radio Frequency Communications

The PD generates and uses radio frequency energy. If not installed and used in accordance with the manufacturer’s instructions, it may cause interference to radio and television reception. The PD has been tested and found to comply with the specifications in Part 15 of Radiators and FCC Rules for Class B Computing Devices.

CAUTION: Robertshaw Industrial Products does not support field changes or modifications to any of the Centeron® Level Monitoring System equipment unless they are specifically covered in this manual. All adjustments must be made at the factory under the specific guidelines set forth in our manufacturing processes. Any modification to the equipment will void the manufacturer’s warranty and could void the user’s authority to operate the equipment and render the equipment in violation of FCC Part 15, Subpart C, 15.247.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

2.4.2 Canada

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

2.4.3 Safety and Regulatory

The PD complies with UL 61010B-1 Electrical Measuring and Test Equipment; Part 1.

The PD is self-contained and operates on an internal 12.8V non-rechargeable Lithium MnO₂ battery pack, which should only be serviced by certified service personnel (See Section 5.3).

3.0 Installation

A list of the provided equipment and additional tools required for installation can be found in the Installation Guide (p/n 040155C0001).

NOTE: The PD should be configured on Web View prior to installing the unit in the field. Otherwise the installation confirmation message cannot be sent.

3.1 Handling Guidelines

The PD should be handled with care. The electronics inside of the enclosure are static sensitive. Do not handle the electronics outside of their enclosure without proper static precautions.

3.2 Mounting



WARNING: Do not install on tanks that are located in Classified Hazardous Locations or contain flammable vapors.

IMPORTANT NOTE: The PD is designed for use on freely vented tanks. The use of this device on tanks with vapor recovery systems or tanks with vents that allow a pressure or vacuum to exist inside the tank is not recommended.

NOTE: For optimal performance, avoid mounting multiple cellular products within 2' of each other.

3.2.1 Mounting Step 1

Select a mounting bung on the top of the tank that will allow the PD's cable to hang down vertically inside the tank with the sensor laying flat on the bottom. Verify that there is adequate clearance for the sensor or cable to reach the bottom of the tank. The Monitor may be installed in a vertical standpipe if necessary. In this case, the standpipe must still allow the pressure sensor to reach and lay flat on the bottom. If the only access to the tank is where the vent is currently mounted, then a T-couple pipe adapter may be used to mount the Monitor with the vent connected to the perpendicular inlet. Check the size of the bung pipe thread. If different than 1.5" NPT or 2" NPT a pipe thread adapter is needed.

3.2.2 Mounting Step 2

Measure from the top of the tank bung (or standpipe/adapter) to the inside bottom surface of the tank. Verify that the pressure sensor will lay flat on the bottom of the tank when the Monitor is installed (Max. install height is 144 inches). Monitor will only be able to measure liquid level above the installed pressure sensor position.

3.2.3 Mounting Step 3

Carefully unpack the Monitor from the shipping box, remove the antenna shipping protector if installed, and un-twist the wire ties on the pressure sensor cable. Slip the appropriate size O-ring over the pressure sensor, cable, and Monitor mounting threads. Slide the O-ring backward past the lip at the base of the Monitor threads pressing along the O-ring circumference until it is snug. Lower the pressure sensor and cable into the tank while being extremely careful not to nick the cable insulation on the tank threads. Verify that no twists or kinks are allowed to remain in the cable that would prevent the sensor from reaching the bottom. Imperfections in the cable such as these must be straightened by hand as the cable is lowered into the tank.

3.2.4 Mounting Step 4

Carefully thread the Monitor into the tank opening by hand tightening it 1/8 turn clockwise past engaging the O-ring. Assembly requires only a snug fit.

Note: Over-tightening may cause damage to the Monitor threads and O-ring.

3.3 Activation

Following installation, the unit can be activated:

3.3.1 Activation Step 1

To activate the Monitor, pull the external slide magnet completely out of the top of the Monitor housing. This will activate the Monitor to make measurements and radio transmissions on a programmed interval (per customer configured schedule via the Centeron Web Site).

Note: Do not discard the magnet completely—keep it accessible for future use if needed. Do not store the magnet in the monitor upper housing slot since this will deactivate the monitor.

Once the external slide magnet is removed from the Monitor, the Monitor should take a measurement and send this data through a Cellular transmission. If the installer's Cell Phone is available and active with the phone number set up on the Centeron® Web Site as an Email address a successfully installation text message should be received within 5 minutes. If an installer's Cell Phone is not available, the installer can contact someone at his company who has access to Web View or call Robertshaw Technical Support for installation verification (See Section 5.3).

4.0 Troubleshooting

If the PD is not operating properly, locate the solution below:

| Issue | Resolution |
|---|--|
| Installer didn't receive a confirmation page when magnet was pulled from unit. | Verify that installer's e-mail address was set up on Web View to receive notification when data is sent. |
| When looking at Web View, configuration data wasn't sent when a magnet pull was done. | See if "Downloaded" checkbox is checked. If so, configuration was already downloaded. Verify that magnet was left in the unit for over 1 minute before it was pulled. |
| All installation and activation instructions have been followed completely, but the PD will not report valid information to Web View. | Call Robertshaw Technical Support. (See Section 5.3) |

5.0 Warranty and Service

5.1 Warranty

Seller warrants title and that products sold to Buyer shall be free from defects in material and workmanship and shall conform to specifications for a period of one (1) year from purchase date for complete units and parts and subassemblies. Warranties on goods sold but not manufactured by the seller are expressly limited to the terms of warranties of the manufacturer of such goods.

Seller makes no representation or warranty of any kind, express or implied, as to merchantability, fitness for particular purpose or any other matter. Upon receipt of definite shipping instructions, Buyer shall return, transportation prepaid, all defective material, or material not conforming to specifications, to Seller, after inspection by Seller, or at Seller's election, subject to inspection by Seller. Material returned by Buyer must be returned in same condition as when received by Buyer. Defective material, or material not conforming to specifications, so returned shall be replaced or repaired by Seller and returned, freight prepaid, without any additional charge, or in lieu of such replacement or repair, Seller, may, at Seller's option, refund the purchase price applicable to such material. Seller agrees to pay return freight charges not exceeding the lowest rail or truck rate which would apply from the original destination on all defective material, or material

not meeting specifications. However, Seller shall not be obligated for such charges when material returned proves to be free from defect and to meet specifications. Material which proves to be free from defect and to meet specifications shall be held by Seller for shipping instructions and Buyer shall furnish such instructions promptly upon request. Seller's liability shall be limited solely to the replacement or repair or to refunding the purchase price applicable to the defective material or material not meeting specifications. Seller shall not be liable for any consequential damages nor any loss, damages or expenses directly or indirectly arising from the use of the material.

5.2 Unit Disposal

The U.S. Environmental Protection Agency regulates the disposal of waste products in the United States. The EPA Regulations are listed in the "Code of Federal Regulations," CFR40, entitled "Protection of Environment." Individual states and local communities also may establish regulations covering the disposal of waste products. These may be more stringent than the federal regulations and may cover the disposal of household waste, which is not included in the federal regulation. Thus, state and local agencies should be contacted for their disposal guidelines.

5.3 Service and Technical Support

If you experience trouble with this equipment, please contact **Robertshaw Industrial Products Technical Support at (865) 981-3118, Monday through Friday, EST 8:00 a.m. to 4:30 p.m.**

This unit is to be serviced by certified service personnel only.



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